

1 **(BSP February 2, 2004)**

2 **Column Jacketing**

3 The steel column jacket assembly for each column shown in the Plans shall be
4 fabricated in accordance with the shop drawings as approved by the Engineer.

5
6 The Contractor shall excavate and shore as required to expose the column surface
7 below ground to the top of the existing footing or footing pedestal. The surface of
8 the existing column shall be cleaned and prepared in accordance with the column
9 jacket installation plan as approved by the Engineer.

10
11 For specific columns for which the Engineer approves a waiver of the pre-
12 fabrication field measuring of the column height dimension, the Contractor shall
13 field measure the column height upon completion of the excavation. The
14 Contractor shall field cut the top of the column jacket assembly using the method,
15 template, and equipment as specified in the pre-fabrication field measuring waiver
16 request submittal as approved by the Engineer. The fabrication, removal, and
17 disposal of the excess column jacket length shall be performed at no additional
18 expense to the Contracting Agency.

19
20 The Contractor shall position the steel column jacket around the existing column
21 using spacers to center the assembly. The spacers may be welded to the inside of
22 the jacket and, if used, shall be placed and attached as shown in the shop
23 drawings as approved by the Engineer.

24
25 Field welded complete penetration groove welds of the column jacket assemblies
26 shall be inspected in accordance with Section 6-03.3(25)A as supplemented in
27 these Special Provisions.

28
29 The Contractor shall install external grout injection valves for use in filling the cavity
30 with grout, installing at least the minimum number of valves as shown in the Plans.
31 The valves shall be spaced such that the grout will uniformly fill the gap between
32 the jacket assembly and the column surface. The grout pump shall be equipped
33 with a pressure gauge to monitor grout pressures. The grouting equipment shall be
34 sized to enable the grout to be pumped in one continuous operation. The mixer
35 shall be capable of continuously agitating the grout.

36
37 The production grout compressive strength shall be measured using 100 millimeter
38 diameter by 205 millimeter cylinders, cast and cured under the same conditions as
39 the grouted column jacket assembly. The cylinders shall attain a minimum seven
40 day compressive strength of 16.5 MPa.

41
42 The gap between the column jacket assembly and the existing column surface at
43 the base of the assembly shall be completely sealed in accordance with the column
44 jacket installation plan as approved by the Engineer.

45
46 The grouting operation shall begin from the base of the assembly and from the
47 base of each successive lift. The Contractor shall pump grout into the assembly
48 while maintaining a uniform level grout head around the column.

49
50 The Contractor shall limit the height of each lift of grout to minimize undulations and
51 displacements of the surface of the column jacket assembly during grouting. For
52 column jacket assemblies of circular (constant radius) cross section, the height of

1 each lift of grout shall be limited to 6.10 meters maximum. For column jacket
2 assemblies with cross sections of all other shapes, the height of each lift of grout
3 shall be limited to 2.44 meters maximum. The Contractor may restrain the column
4 jacket assembly within the specified tolerances during grouting operations by using
5 a bracing system in accordance with the column jacket installation plan as
6 approved by the Engineer. Except as otherwise shown in the Plans, restraints for
7 the bracing system shall not pass through the column. Except when a bracing
8 system is used, placement of the next grout lift shall not begin until the previous
9 grout lift has hardened.

10
11 The Contractor shall contain and collect all grout outside the column jacket
12 assembly, in accordance with the column jacket installation plan as approved by
13 the Engineer, and shall not permit grout to flow onto the shoulder, gutter, or lane, or
14 into drainage structures.

15
16 When the assembly is completely grouted to the top, the Contractor shall place
17 mortar over the top of the grout at the top of the assembly, and shall slope the
18 mortar to drain.

19
20 All clamps, valves, injection ports, lifting ears, and other attachments shall be
21 removed not less than 24 hours after completing grouting operations at the column.
22 The Contractor shall fill all voids with mortar, and shall finish them flush with the
23 exterior surface of the column jacket assembly. The Contractor shall not remove
24 the attachments by flame cutting.

25
26 Seven calendar days after completing the grouting of a column jacket assembly,
27 the Engineer will inspect the assembly for voids between the steel casing and the
28 grout. The Contractor shall completely fill all voids detected by the Engineer by
29 injecting epoxy bonding agent into the lowest point of each void and venting at the
30 highest point. The exposed epoxy bonding agent shall be finished flush with the
31 exterior surface of the column jacket assembly.

32
33 Steel surfaces with damaged primer coat shall be repaired with field primer in
34 accordance with Section 6-07.3(1). The primer repair shall be followed by
35 application of the intermediate and finish field coats of paint to all exposed steel
36 surfaces in accordance with Section 6-07.3(1) and Section 6-03.3(30) as
37 supplemented in these Special Provisions.

38
39 The Contractor shall fill the excavation in accordance with Section 2-09.3(1)E and
40 the following requirements:

- 41
42 1. For backfill supporting roadbed, roadway embankments, or structures, the
43 backfill shall be gravel borrow conforming to Section 9-03.14(1).
44
45 2. For backfill in all other situations, the backfill shall be native backfill
46 material compacted in accordance with Section 2-03.3(14)C, except that
47 the backfill shall be compacted to 80 percent of the maximum density as
48 specified.